Appendix 5.5-A

Smart Growth Literature Review

2

Literature Review

2.1 Introduction

This chapter provides a summary of the *Corridor Plan* and a review of experience in monitoring smart growth from relevant regional planning examples.

2.2 Summary of the South Coast Rail Economic Development and Corridor Plan

The *Corridor Plan*, prepared in June 2009, was developed as part of the proposed South Coast Rail project.[2] The Plan was developed through a collaborative process which resulted in a "blueprint for clustering jobs and homes around stations, maximizing the economic benefits or rail investment, minimizing sprawl development, and preserving the farms, fields, and forests of the South Coast." The *Corridor Plan* seeks to:

- Advance the Commonwealth of Massachusetts' Sustainable Development Principles;
- Advance a robust effort to preserve critical environmental resources as the region's population grows;
- Optimize development around train stations;
- Target investment in places where infrastructure is already in place;
- Encourage collaborative land use planning across municipal boundaries; and

2 Commonwealth of Massachusetts. *South Coast Rail Economic Development and Land Use Corridor Plan.* June 2009.

- Provide supportive state policies and investments to cities and towns.

The *Corridor Plan* is comprised of three elements: Priority Development Areas (PDAs), Priority Protection Areas (PPAs), and Station Area Development. PDAs include major downtowns, large employment centers, locations around future South Coast Rail stations, and other areas that have been identified as having the potential to support business or residential growth. The PPAs include farmlands, sensitive habitat and environmental resource areas, potential linkages between existing open space resources, and places of cultural or historic significance. The *Corridor Plan* also evaluates the potential for TOD around future stations.

As described in the *Corridor Plan*, the locations of new South Coast Rail stations were selected and designed to address several key public goals: to serve existing residential and employment centers within the region; to foster new development around stations; to accommodate people arriving by a range of different modes including car, bus, foot and bike; and to address the operational needs of the rail system and provide access for future riders. These new stations fall into four basic categories: multimodal hub, new center, village station, and park-and-ride station. The *Corridor Plan* sets forth a number of goals for station and station area development:

- Approach each station site as a unique design opportunity to achieve the site's highest potential while optimizing development and parking potential system-wide;
- Plan for economic and housing development at station sites and catalyze smart-growth investments within the one-mile station radii;
- Provide adequate and equitable parking options that respect the community character;
- Provide safe, convenient access to and from the stations for all modes of transportation; and
- Design station areas and station parking to be environmentally-friendly and energy-efficient.

The *Corridor Plan* also includes a number of policies, tools, and strategies that offer municipalities and public agencies a range of tactics to implement the *Corridor Plan*. Although the *Corridor Plan* focuses primarily on the involved state agencies and the South Coast region municipalities, technical assistance from the Regional Planning Agencies (Southeastern Regional Planning and Economic Development District [SRPEDD], the Metropolitan Area Planning Council [MAPC], and the Old Colony Planning Council [OCPC]) to the local municipalities will be required for successful implementation of these policies, tools, and strategies. The *Corridor Plan's* suggested policies, tools, and strategies include the following.

State Agencies

- Maximize use of TOD to create great places at the station areas by:
  - Creating multimodal and public-realm connections to stations, including investments in bicycle and pedestrian access;
  - Incorporating solar, photovoltaic, wind, district energy, and energy-efficient technologies and green building standards for stations, parking facilities, and station areas;
  - Planning for short- and long-term TOD opportunities and seek out public ownership of land for station areas; and
  - Coordinating job creation, green job incubators, and employer-attraction initiatives with station area development.
- Direct discretionary state funding to encourage zoning and land use changes in support of sustainable development.
- Steer their own investments in state infrastructure, buildings, and office leases to station areas and priority development areas.
- Provide technical assistance to expand affordable housing opportunities within the PDAs.
- Create a Transfer of Development Rights (TDR) program to steer growth away from PPAs and other sensitive locations to PDAs.
- Capture new tax revenue from growth around new stations for reinvestment.

State Agencies and Regional Planning Agencies

- Provide technical assistance to municipalities.

Municipalities

- Create a foundation for sustainability community development through planning. This could be accomplished by creating:
  - Master or Comprehensive Plans;
  - Community Development Plans (CDP);
  - Open Space and Recreation Plans;
  - Housing Production Plans;
  - Water and Sewer Plans;
  - Watershed Protection Plan; and
  - Specific Station-Area Plans.
- Utilize strategies and tools to achieve preservation including:
  - Adopting the Community Preservation Act;

- Protecting agricultural land and activities through adoption of agricultural zoning or right-to-farm bylaws, conservation subdivision bylaws (cluster development), TDR bylaws, and scenic road bylaws.
- Preserving historic resources through adoption of demolition delay bylaws and establishing historic districts or designating landmarks;
- Protecting other sensitive areas through the adoption of design review bylaws; and
- Protecting wetlands through adoption of local wetland protection bylaws, use of low impact development techniques, and development of stormwater management plans.

- Utilize strategies and tools for the promotion of development including:
  - Using Chapter 43D[3] to promote development in the PDAs;
  - Redeveloping contaminated sites using the technical and financial assistance from brownfields redevelopment programs;
  - Using Chapters 40R and 40S[4] and tax-increment financing and district-improvement financing to support private development;
  - Adopting zoning changes that support TOD, higher densities, and mixed use developments;
  - Developing parking-management strategies and allow shared parking; and
  - Adopting housing-related policies including inclusionary zoning, accessory dwelling units, multi-family housing, Chapter 40B[5], and the Community Preservation Act.

Table 2-1 outlines the responsibilities of the state agencies, the regional planning agencies, and the municipalities in achieving the goals set out in the *Corridor Plan*.

3 Massachusetts General Law Chapter 43D offers communities a tool for targeted economic development. Also known as local expedited permitting, if a municipality opts in, Chapter 43D provides a transparent and efficient process for municipal permitting; guarantees local permitting decisions on priority development sites within 180 days; and increases the visibility of the community and target development sites.

4 Chapter 40R of the Massachusetts General Laws encourages cities and towns to establish new overlay zoning districts to promote housing production and, more generally, smart growth development. Chapters 40R and 40S both provide financial incentives to communities to adopt these new zoning districts.

5 Massachusetts General Law Chapter 40B enables local Zoning Boards of Appeals to approve affordable housing developments under flexible rules in 20 to 25 percent of the units have long-term affordability restrictions.

Table 2-1 Implementation Responsibilities of the South Coast Rail Corridor Plan

Action	Responsible Entity
Technical assistance, funding, regulation, and legislative proposals to implement the state agency actions.	State – Development Cabinet
Update the *Corridor Plan* each year and refine the implementation strategies.	State – All agencies
Provide technical assistance to communities for smart growth implementation and to advance PPA and PDA goals.	State – All agencies
Develop more detailed station-area plans and station-area zoning.	State – MassDOT, EOHED, MBTA Regional Planning Agencies Municipalities
Continue civic engagement activities to foster public dialogue and discussion of the *Corridor Plan*, incorporating public input into design of South Coast Rail Project.	State – MassDOT
Continue to work with Regional Planning Agencies using Direct Local Technical Assistance funding to support implementation of actions at the local level.	State – EOHED Regional Planning Agencies
Continue to provide technical assistance to corridor communities to enhance smart growth planning, encourage TOD in station areas, and assist corridor communities with implementation of PPAs and PDAs.	State – EOHED Regional Planning Agencies
Build on and advance planning for PDAs and PPAs within the Corridor Map and other regionally and locally identified PDAs and PPAs.	State – All agencies Municipalities
Draw on technical assistance to explore potential application of smart growth tools and ordinances consistent with community goals and the *Corridor Plan*.	Municipalities
Prepare station area plans to guide investment around future stations through additional analysis and planning, as well as through engagement of the public, property owners, and developers.	Municipalities
Consider revisions in local regulations, including zoning where necessary, in order to reposition station areas to attract appropriate development.	Municipalities

Source: Commonwealth of Massachusetts. *South Coast Rail Economic Development and Land Use Corridor Plan*. June 2009.
Notes:
EOHED Executive Office of Housing and Economic Development
MassDOT Massachusetts Department of Transportation
MBTA Massachusetts Bay Transportation Authority
TOD Transit Oriented Development
PPA Priority Preservation Areas
PDA Priority Development Areas

The *Corridor Plan* does not identify metrics that would measure the success of the implementation strategies identified in Table 2-1. The Secretary of EOEEA, in his Certificate on the Draft Environmental Impact Report for the South Coast Rail project, required that MassDOT develop metrics that would serve to determine the effectiveness of the plan implementation. The metrics should monitor and measure

the potential smart growth and environmental benefits from the *Corridor Plan* implementation. Specifically, based on the goals outlined in the *Corridor Plan*, detailed metrics are required for the following categories:

- EIS/EIR and General metrics;
- Priority Development Area metrics;
- Transit Oriented Development metrics;
- Conservation and Priority Preservation Area metrics;
- Social Equity metrics.

The specific metrics will measure how well the goals of the *Corridor Plan* are being implemented by the South Coast region municipalities, regional planning agencies, and state agencies through the policies, tools, and strategies identified in the *Corridor Plan*.

2.3 Literature Review

As there are no metrics or indicators included in the *Corridor Plan*, MassDOT undertook a literature review as directed by the Secretary's Certificate on the DEIS/DEIR. Beginning with existing models and performance metrics in Massachusetts, MassDOT reviewed the effectiveness of these models and metrics in evaluating smart growth and environmental protection strategies. MassDOT also reviewed examples from across the nation for applicability to the South Coast Rail project.

Massachusetts does not have any state-wide legislative mandate to utilize smart growth principles. While there are no state-wide legislative mandates, Executive Order 525 mandates that state agencies implement the commitments identified in the *Corridor Plan.* Executive Order 525, issued by Governor Deval Patrick in September 2010, provides for the implementation of the *Corridor Plan*.[6] Executive Order 525 directs state agencies to make infrastructure and land protection investments consistent with the priority areas identified on the Corridor Map of the *Corridor Plan*. The priority areas include 33 priority development areas (PDAs) and 72 priority protection areas (PPA) and one combined PDA/PPA. Massachusetts' state agencies are now using the *Corridor Plan* to guide investments in infrastructure and land protection, and to target technical assistance where it is most needed. In order to facilitate smart growth planning efforts by communities in the South Coast Region, a total of $300,000 per year has already been provided over four years in technical assistance to plan for smart growth in South Coast communities. The Executive

6 Commonwealth of Massachusetts. *Executive Order 525: Providing for the Implementation of the South Coast Rail Corridor Plan.* September 29, 2010.

Order mandates policy commitments made in the *Corridor Plan* for "Strategic Investments" by committing the Commonwealth to use its discretionary grant funds and its investments in state buildings and infrastructure to support the recommendations of the *Corridor Plan*.

In order to provide technical assistance to all communities throughout the Commonwealth, the Massachusetts Executive Office of Energy and Environmental Affairs has developed a Smart Growth/Smart Energy Toolkit[7] which provides information and technical assistance to a variety of users, including planners, developers, and designers, who are interested in implementing smart growth principles for individual projects or communities. The Smart Growth/Smart Energy Toolkit provides examples of Massachusetts communities utilizing the individual tools identified in the toolkit to implement smart growth principles, but no examples are provided of comprehensive smart growth planning linked to specific metrics to monitor the implementation of smart growth principles.

As there were no other state-wide examples or regional examples of existing models and performance metrics, the research included states across the nation. Five case studies were examined in further detail:

- San Diego's *Regional Comprehensive Plan*
- *Maryland Smart Growth Indicators Project*
- Puget Sound Regional Council's *VISION 2040* and Growing Transit Communities
- Atlanta Regional Commission's Livable Centers Initiative
- New Jersey Transit Village Initiative

This selection of case studies provides some context for the performance metrics that were later developed for the South Coast Rail project. In some cases, follow-up phone interviews with planners involved with the implementation of these plans were completed. The purpose of phone interviews was to get more detailed information on the status of the case studies and on the metrics used to measure the success of these plans.

In addition to the study of select regional plans and performance metrics, reports and guidance documents from federal agencies, transportation research organizations, and non-profits such as the Center for Neighborhood Technology and the Brookings Institute were reviewed. A full list of the sources consulted is provided in Chapter 7, *References*.

7 Massachusetts Smart Growth/Smart Energy Toolkit. Available: http://www.mass.gov/envir/smart_growth_toolkit/index.html

2.3.1 San Diego's *Regional Comprehensive Plan*

The *Regional Comprehensive Plan* (RCP) serves as the long-term planning framework for the San Diego region.[8] While the RCP is not specifically a corridor plan, there is a strong smart growth component which focuses development within Smart Growth Opportunity Areas and promotes habitat conservation within designated preserve areas. The RCP was adopted by the San Diego Association of Governments (SANDAG) Board of Directors in June 2004. The RCP defined a vision and identified goals, key issues, and needed actions in areas ranging from urban form and transportation to public facilities and borders. The RCP characterized the state of the region at the time of adoption, where the region aims to be by 2030, and what the region needs to do to achieve this vision of the future.

The RCP specifically required ongoing monitoring to track progress toward meeting the goals outlined in the plan. The Annual Indicators for Monitoring included metrics to measure the progress related to urban form and transportation, housing, healthy environment, economic prosperity, public facilities, and borders. Many of the strategies and actions recommended in the RCP will take years to develop and fund. Therefore, SANDAG staff indicated it is important to have a consistent and valid set of indicators that can reflect sometimes subtle changes that occur over the long run.[9] Performance monitoring reports on these indicators will assess how the RCP is influencing the quality of life in the San Diego region.

The RCP Baseline report for Performance Monitoring was completed in late 2006 and it established the benchmark for future annual monitoring. The 2009 RCP Monitoring Report was the third report to be published and was distributed in September 2010.[10] SANDAG had been reporting annually, but it became an intensive task for the SANDAG staff prompting the decision to report findings bi-annually rather than annually.[11] The changes that were seen in the data were quite small and did not necessarily show any trends from year to year. It is not expected that reporting bi-annually will show any trends either from report to report but over the long term the monitoring will reveal trends.

The RCP reports on approximately 35 to 40 indicators currently (Table 2-2). The list of indicators is revised periodically as new plans are adopted, to reflect indicators included in those plans. As described in the 2009 Monitoring Report, many of the indicators use the American Community Survey (ACS) as the data source. The ACS program of the U.S. Census Bureau collects and disseminates demographic, socioeconomic, and housing data on an annual basis. Data are collected from one of every 40 addresses, or approximately 2.5 percent of the population, for a total of about three million addresses a year. Other indicators are based on data that

8 The San Diego Association of Governments (SANDAG). *Regional Comprehensive Plan for the San Diego Region*. July 2004.
9 Early, Christine, Planner, San Diego Association of Governments. Personal Communication. February 28, 2012.
10 The San Diego Association of Governments (SANDAG). Regional Comprehensive Plan 2009 Annual Performance Monitoring Report. 2009.
11 Early, Christine, Planner, San Diego Association of Governments. Personal Communication. February 28, 2012.

SANDAG routinely collects in order to limit the burden on staff and regional communities. Still other indicators were removed since attempts to identify data sources have not been successful. The RCP will be updated in 2014/2015. At that time, the indicators will be revisited.

Table 2-2 SANDAG Indicators for Monitoring the *Regional Comprehensive Plan*

Topic	Indicator	Data Source
Urban Form and Transportation	Share of new housing units and jobs located in Smart Growth Opportunity Areas	SANDAG
	Share of new housing units within County Water Authority water service boundary	SANDAG
	Annual transit ridership	Metropolitan Transit System North County Transit System SANDAG
	Commute mode shares	ACS, U.S. Census Bureau
	Travel times and volumes for key transportation corridors	Caltrans
	Annual hours of traffic delay per traveler	Texas Transportation Institute
	Regional crime rate	Local law enforcement agencies
Housing	Housing Opportunity Index	National Association of Home Builders
	Percent of households with housing costs greater than 35 percent of income	ACS, U.S. Census Bureau National Low-Income Housing Coalition
	Ratio of new jobs to new housing units	SANDAG California Employment Development Department
	Share of new and existing housing units by structure type and income category	Local Jurisdictions (building permits)
	Vacancy rates	ACS, U.S. Census Bureau
	Percent of households living in overcrowded conditions	ACS, U.S. Census Bureau
	Number of households on the waiting list for Section 8 vouchers	Local jurisdictions
Healthy Environment	Habitat conserved within designated preserve areas	Local jurisdictions
	Percent of preserve areas actively maintained	SANDAG
	Number of beach mile closure days	County of San Diego Department of Environmental Health Western Regional Climate Center
	Impaired waterbodies	San Diego Regional Water Quality Control Board
	Beach widths	SANDAG
	EPA's Air Quality Index	San Diego Air Pollution Control District

Table 2-2 SANDAG Indicators for Monitoring the Regional Comprehensive Plan (continued)

Topic	Indicator	Data Source
Economic Prosperity	Labor force educational attainment	ACS, U.S. Census Bureau
	Employment growth in high-wage economic clusters	SANDAG
	Regional unemployment rate compared to California and the United States	California Employment Development Department U.S. Department of Labor Bureau of Labor Statistics
	Real per capita income compared to California and the United States	U.S. Bureau of Economic Analysis SANDAG U.S. Census Bureau
	Regional poverty rate compared to California and the United States	ACS, U.S. Census Bureau
Public Facilities	Total water consumption	San Diego County Water Authority
	Diversity of water supply	San Diego County Water Authority
	Recycled water use	San Diego County Water Authority
	Regional energy by source	San Diego Gas & Electric
	Share of energy produced from renewable resources	San Diego Gas & Electric
	Per capita peak demand for electricity	San Diego Gas & Electric
	Electricity consumption by sector	San Diego Gas & Electric
	Natural gas consumption by sector	Energy Policy Initiatives Center, University of San Diego
	Percent of solid waste that is recycled	California Integrated Waste Management Board
	Landfill space available	California Integrated Waste Management Board
Borders	Interregional traffic volumes into San Diego from surrounding counties and Baja California	Caltrans Traffic Census SANDAG
	Border wait times	U.S. Customs and Border Protection
	Participation in SENTRI Lanes	SANDAG

Source: The San Diego Association of Governments (SANDAG). *Regional Comprehensive Plan 2009 Annual Performance Monitoring Report*. 2009.
Notes:
ACS U.S. Census Bureau's American Community Survey
Caltrans California Department of Transportation
EPA U.S. Environmental Protection Agency
SANDAG San Diego Association of Governments
SENTRI Secure Electronic Network for Travelers Rapid Inspections

2.3.2 *Maryland Smart Growth Indicators Project*

The Maryland Smart Growth Program was introduced by former Governor Parris Glendening in 1997 and passed by the Maryland General Assembly. The program has two main parts: the Smart Growth Areas Act and the Rural Legacy Program. The program encourages new growth in already developed areas, where adequate infrastructure and public facilities currently exist, and thus protects natural resources, farmland, and forests. The program is usually referred to as an incentive-based, rather than a regulatory, program: it provides state funds for infrastructure development in designated Priority Funding Areas (PFAs), and funding and other incentives for the protection of land outside of PFAs. The goals of Maryland's Smart Growth initiative are expressed in broad terms. The general goals of the program are:

- To support and enhance existing communities; and
- To save taxpayers from the cost of building new and often redundant infrastructure.

In 2009, as part of the Smart, Green, and Growing Planning Legislation, the Maryland General Assembly passed two major updates to the state's Smart Growth Program that are relevant to the question of performance measurement.[12] The Planning Visions bill (SB 273/HB 294) revised the State's growth visions to 12, which more comprehensively address the broad impacts of growth and collectively describe an integrated vision for sustainable development in Maryland. These 12 visions could logically be used as categories of areas that the State wants to influence and, thus, wants to measure to see if it is in fact having any influence. The second, the Smart Growth Goals, Measures, and Indicators and Implementation of Planning Visions bill (SB276/HB295), requires counties in Maryland to report certain data relating to the visions on an annual basis to the Maryland Department of Planning (MDP). MDP, in turn, is required to work with the National Center for Smart Growth Research and Education (NCSG) at the University of Maryland to gather additional data from state and federal sources and annually report on these measures and indicators of growth to the Governor and General Assembly. The legislation established a goal of increasing the percentage of growth within PFAs statewide, and required counties to set their own goal for the percentage of future growth that would occur within their PFAs.

The reporting required from Maryland counties under the Smart Growth Goals, Measures, and Indicators and Implementation of Planning Visions bill began in July 2011; however, the NCSG began to collect and report on a variety of indicators more recently to permit a better understanding of where smart growth in Maryland was succeeding and where it needed improvement. The indicators are grouped into

12 2009 Smart, Green & Growing Planning Legislation including the Smart and Sustainable Growth Act of 2009 (SB 280/HB297), the Smart Growth Measures and Markers (SB276/HB295), and Planning Visions (SB273/HB294).

eight categories: Population, Economy, Environment, Land Preservation, Infrastructure, Transportation, Housing, and Land Use. Most of the data came from readily available sources, such as the U.S. Census Bureau and various Maryland state agencies (Table 2-3). The NCSG attempted to choose meaningful data that tell a story without over simplifying or creating unnecessary complexity.[13]

The NCSG reported its findings on the *Maryland Smart Growth Indicators* website.[14] While the website compiles historical data for each indicator as available, there are no firm plans for the publication of the indicators in the future due to funding constraints. Looking back to the historical data, the NCSG cautions that change happens slowly over time, and it will be difficult to truly evaluate how Maryland's smart growth legislation has had a measurable impact on development.[15]

Table 2-3 Maryland Smart Growth Indicators

Topic	Indicator	Data Source
Population	Historic Population	U.S. Census Bureau
	Projected Population	U.S. Census Bureau
	Foreign Born Population	U.S. Census Bureau
	Minority Population	U.S. Census Bureau
	Elderly Population	U.S. Census Bureau
	Youth Population	U.S. Census Bureau
	Level of Education	MDP
	Population Inside Priority Funding Areas (PFA)	MDP
	Population Outside PFA	MDP
Economy	Job Density	U.S. Census Bureau
	Median Household Income	U.S. Census Bureau
	Families in Poverty	U.S. Census Bureau
	Total Wages by Industry Type	U.S. Department of Labor
	Average Weekly Wages per Worker	U.S. Department of Labor
	Annual Average Employment	U.S. Department of Labor
	Average Number of Establishments	U.S. Department of Labor
Environment	Green Infrastructure Acres	Maryland Department of Natural Resources
	Tree Coverage	U.S. Forest Service
	LEED® Registered Projects	U.S. Green Building Council
	Phosphorous Contributions to the Bay	Chesapeake Bay Program Water Quality Database
	Nitrogen Contributions to the Bay	CBP Water Quality Database

13 Santori, Jason. Research Associate, The National Center for Smart Growth Research and Education at the University of Maryland. Personal Communication. March 2, 2012.
14 Maryland Smart Growth Indicators Project, http://www.indicatorproject.com/. Accessed February 2012.
15 Santori, Jason. Research Associate, The National Center for Smart Growth Research and Education at the University of Maryland. Personal Communication. March 2, 2012.

Table 2-3 Maryland Smart Growth Indicators (continued)

Topic	Indicator	Data Source
Land Preservation	Rural Legacy Acres	MDP
	Private Conservation Organization Acres	MDP
	Maryland Environmental Trust Easement Acres	MDP
	Maryland Agricultural Land Preservation Foundation Acres	MDP Maryland Department of Natural Resources
Infrastructure	Pupils Transported by School Bus	Maryland Department of Education
	School Bus Expenditures	Maryland Department of Education
	Bus Route Miles Traveled	Maryland Department of Education
	Projected Public School Enrollment	Maryland Department of Education
Transportation	Roadway Capacity Utilization	Maryland Department of Transportation
	Lane Miles	Maryland Department of Transportation
	Vehicle Registrations	Maryland Motor Vehicle Administration
	Vehicle Registrations per Capita	Maryland Motor Vehicle Administration U.S. Census Bureau MDP
	Vehicle Miles Traveled	Maryland State Highway Administration
	Transportation Enhancement Spending	National Transportation Enhancements Clearinghouse
	County Land Area in Transit Shed	MTA WMATA
	Percent County Land Area in Transit Shed	MTA WMATA
	County Population in Transit Shed	U.S. Census Bureau
	Percent County Population in Transit Shed	U.S. Census Bureau
	County Jobs in Transit Shed	Maryland Department of Labor
	Percent County Jobs in Transit Shed	Maryland Department of Labor
	Population in Transit Shed	U.S. Census Bureau
	Transit Shed Population Density	U.S. Census Bureau
	Transit Shed Percent of Average County Population Density	U.S. Census Bureau
	Jobs in Transit Shed	Maryland Department of Labor
	Ridership	MTA WMATA
	Parking Spaces	MTA WMATA
	Number of Trains	MTA

Table 2-3 Maryland Smart Growth Indicators (continued)

Topic	Indicator	Data Source
Housing	Housing Affordability	Maryland Association of Realtors U.S. Census Bureau
	Homeownership Rate	DataPlace by KnowledgePlex
	Ratio of Jobs to Housing	U.S. Census Bureau
	Median Price of Housing Units	Maryland Association of Realtors
	New Housing Units Authorized for Construction	U.S. Census Bureau
	Percentage of New Housing Units Authorized for Construction	U.S. Census Bureau
	Number of Residential Sales Inside PFAs	Maryland Property Sales Data
	Number of Residential Sales Outside PFAs	Maryland Property Sales Data
	Housing Vacancy Rate	U.S. Census Bureau
	Residential Home Starts Inside PFAs	MDP
	Residential Home Starts Outside PFAs	MDP
Land Use	Percent of Land Developed	MDP
	Improved Single Family Lots (acres) Inside PFAs	MDP
	Improved Single Family Lots (acres) Outside PFAs	MDP
	Improved Single Family Lots (parcels) Inside PFAs	MDP
	Improved Single Family Lots (parcels) Outside PFAs	MDP
	Percentage of Land by Use	MDP

Source: Maryland Smart Growth Indicators, www.indicatorsproject.com, Accessed February 2012.
Notes:
MDP Maryland Department of Planning
MTA Maryland Transit Administration
WMATA Washington Metropolitan Area Transit Authority

2.3.3 Puget Sound Regional Council's *VISION 2040* and Growing Transit Communities

In April 2008, the central Puget Sound region in Washington state adopted one of the most detailed and far-reaching sustainability strategies for an urban region in the United States. *VISION 2040* is the long-range, integrated, environmental, land use, economic development, and transportation strategy for a four-county region.[16] *VISION 2040* was developed through a public scenario planning and evaluation process over a three-and-a-half-year period. Under the state growth management planning framework, *VISION 2040*'s policies guide the development of regional implementation plans, local comprehensive plans, and their implementing development regulations. *VISION 2040* includes a monitoring plan to provide policymakers and the public with answers to the following four key questions:

- Is our region developing in a manner that is consistent with our Regional Growth Strategy?

16 Puget Sound Regional Council. VISION 2040. December 2009.

- Do our activities in this region minimize harm to and protect and sustain the natural environment?
- Is our economy strong, and does it provide opportunity for all?
- Do we have a variety of efficient and safe transportation choices that support our growth strategy and offer greater options and better mobility?

Regional monitoring is based upon two major components: implementation monitoring and performance monitoring. Implementation monitoring assesses whether what was committed to is being done. Performance monitoring assesses whether the plan is achieving the desired results. The regional monitoring measures include metrics related to environment, development patterns, housing, economy, transportation, and public services (Table 2-4).

Table 2-4 PSRC's *VISION 2040* Implementation and Performance Monitoring Measures

Topic	Type	Monitoring Measure	Data Source
Environment	IM	Existence of a coordinating mechanism and environmental strategy	Local jurisdictions
	PM	Change in type and distribution of land cover, and related to designated critical areas	Aerial photography Impervious surface analysis
	PM	Water quality and impaired waters designations, by county	Washington Department of Ecology Water Quality Assessment
	PM	Number of unhealthy air days	Puget Sound Clean Air Agency
	PM	Annual average emissions of greenhouse gases	Puget Sound Clean Air Agency
	PM	Track local jurisdictions' efforts to address climate change and other environmental policies	PSRC
Development Patterns	IM	Adopted local population/housing unit and employment growth targets in countywide planning policies	Local jurisdictions
	PM	Development densities and distribution and quantity of designated urban, rural, agriculture, forest, and mineral resource lands. This includes distribution of new issued permits by regional geography	County urban, rural and resource land comprehensive plan designations PSRC
	PM	Body Mass Index, by sex and race, by county	Washington State Department of Health U.S. Centers for Disease Control
Housing	IM	Existence of a coordinating mechanism and housing strategy	PSRC
	PM	Distribution of issued housing permits by regional geography and by county, in order to assess jobs-housing balance and other issues	PSRC
	PM	Supply and distribution of ownership and rental housing units at all income levels by regional geography and by county; affordable housing availability by amount and location; review of local housing elements and plans; tracking of implementation and outcomes; reporting on successes and challenges	U.S. Census Private consultants

Table 2-4 PSRC's VISION 2040 Implementation and Performance Monitoring Measures (continued)

Topic	Type	Monitoring Measure	Data Source
Economy	IM	Demonstrated progress in addressing foundation and cluster initiatives, action items; employer and job locations	Review of Washington's Prosperity Partnership PSRC Local comprehensive plans
	PM	Number of jobs and real wages per worker by employment/industry categories and economic clusters by county, and unemployment rates at subarea level matching state database	Washington State Employment Security Department PSRC
	PM	Number of post-secondary degrees awarded per 1,000 individuals of targeted population groups, and high school completion rates	National Center for Education Statistics Washington State Board for Community and Technical Colleges Office of the Superintendent for Public Instruction
Transportation	IM	Metropolitan Transportation Plan project priorities, funded projects, and completed projects	PSRC Transportation Improvement Program databases
	PM	Travel mode splits, travel times, and delay by county and major corridor, and by regional geography (including designated centers)	U.S. Census PSRC Washington State Department of Transportation
	PM	Traffic volumes, transit boardings, and delay by major corridor, by county and regional geography (including designated centers)	U.S. Census PSRC Washington State Department of Transportation
	PM	Total and per capita vehicle miles traveled, by region, county and major corridor, and by regional geography (including designated centers)	U.S. Census PSRC Washington State Department of Transportation
Public Services	PM	Adequacy of infrastructure capital and operating financial resources	Washington State Department of Transportation PSRC Association of Washington Cities

Source: Puget Sound Regional Council. *VISION 2040*. December 2009.
IM Implementation Measure
PM Performance Measure
PRSC Puget Sound Regional Council

With funding provided by the U.S. Department of Housing and Urban Development Sustainable Communities Regional Planning Grant Program, the PSRC implemented Growing Transit Communities to address the barriers to implementation of the *VISION 2040* plan.[17] With the addition of three new Sound Transit light rail lines, Growing Transit Communities will help local communities to take advantage of the new light rail service, bus rapid transit and other transit investments, with the goal of

17 Bakkenta, Ben. Program Manager, Puget Sound Regional Council. Personal Communication. March 6, 2012.

locating jobs and opportunity closer to where people live. A major product of Growing Transit Communities will be Corridor Action Strategies which will detail the actions and tools needed to make it easier to develop jobs and housing in areas associated with transit investments. Acknowledging the need for safe, secure, quality affordable housing in the region, Growing Transit Communities will develop funding and finance tools and offer technical assistance to housing providers and local jurisdictions. Catalyst demonstration and case study projects in the corridor neighborhoods will implement existing plans and serve as templates for the region's sustainable development.

At this time, the PRSC and its partners are completing an existing conditions report. By the end of 2012, the Corridor Action Strategies will be developed creating a common vision of the unique roles and opportunities at each of the station areas within the corridors, and identify specific issues, priorities, and potential projects. Work elements will include data-based analyses of existing transit and demographic conditions in the corridors, and the development and transmittal of recommendations for how to accelerate the scope and scale of TOD. PSRC will identify regionally significant development opportunities and strategies for catalyzing high quality, equitable TOD in these areas. Grants given out by PSRC will provide jurisdictions, transit agencies, and other stakeholders support in determining how best to use high capacity transit to link residential communities with regional employment centers, and support participating jurisdictions in adopting land use policies that encourage equitable TOD and the preservation and development of affordable housing and commercial space.[18] Activities will result in the development of corridor-based compacts among affected jurisdictions, communities, agencies, and other stakeholders. The corridor compacts and strategies will be the basis for that common vision.

The PSRC's Growing Transit Communities is a strong example of how technical assistance from regional planning commissions can support the planning for new transit corridors. PSRC has given small equity grants to non-profit groups and other community groups active in the proposed rapid transit corridors. With a focus on capacity building, these funded projects will gather information on community values and needs, engage underrepresented communities to help inform the Corridor Action Strategies, and help ensure existing and future communities around transit provide opportunities for diverse populations. To date, there have been no publicly accessible performance metrics for PSRC's Growing Transit Communities program.

18 Bakkenta, Ben. Program Manager, Puget Sound Regional Council. Personal Communication. March 6, 2012.

2.3.4 Atlanta Regional Commission's Livable Centers Initiative

The Atlanta Regional Commission (ARC) adopted the Livable Centers Initiative (LCI) in 1999, with the purpose to help planners and governments more effectively link current and future land use planning to existing or planned transportation infrastructure.[19] The program has enabled the ARC communities to proactively plan for enhanced employment centers, town centers, and transportation centers improving these area's livability. The LCI program has also been able to reduce vehicle miles traveled within the ARC's service area by locating the LCI areas near existing transportation centers.[20] Through the LCI program, local governments and other organizations compete for planning grants to fund studies of future development strategies. Those communities that have adopted the LCI plans are then also eligible to receive design and construction funds for the transportation projects that help implement the plans. There are approximately 111 LCI areas, including town centers, and employment and activity centers.

In addition to the preparation of LCI plans, each LCI community must reassess the LCI with a five-year and ten-year update. This evaluation component is a report on the accomplishments of the LCI community based on goals identified in the LCI plan. The evaluation plans also allow the ARC to gauge which LCI communities need additional technical assistance.[21]

The ARC uses biannual implementation surveys to gather information from each local government that has completed an LCI study in order to track and evaluate the successes and challenges experienced within the LCI community. The 2010 survey included a development inventory and a questionnaire on five topics: built developments, policies, transportation, livability, and LCI plan components. Each biannual survey has two parts: a development matrix and a set of survey questions. The development matrix is used to track development numbers, such as the number of residential units, number of hotel rooms, and commercial square footage, based on the new projects in each LCI. The survey is used to track perceptions and the process. This two-pronged approach allows the ARC to track how well the LCI program is doing in both numbers and through attitudes thereby assessing the effects of the LCI program on development.[22] Each new survey is updated and builds upon the previous year's survey. A sample of the survey questions from 2010 is provided in Table 2-5.

19 Atlanta Regional Commission. 2011. Livable Centers Initiative Implementation Report. (http://www.atlantaregional.com/land-use/livable-centers-initiative) Accessed March 2012.
20 Goodwin, Amy, Principal Planner, Atlanta Regional Commission. Personal Communication, May 17, 2012.
21 Ibid.
22 Ibid.

Table 2-5 ARC 2010 Livable Communities Initiative Implementation Survey Questions and Details

Survey Topic	Requested Information
New Projects	Completed; Planned; Under Construction; Not Specified
Development Inventory	Number of Areas; Number of Projects; Residential Units; Hotel Rooms; Commercial Space; Office Space
Development Density	Acres; Number of Projects; Residential Units; Units per Acre; Hotel Rooms; Hotel Rooms per Acre; Commercial Square Footage; Commercial Square Footage per Acre; Office Square Footage; Office Square Footage per Acre
Residential Development Summary	Residential Units; Projects including Residential Units; Percent of All Projects; Average Number of Residential Units per Project
Commercial Development Summary	Total Commercial Square Footage; Commercial Projects; Percent of All Projects; Average Commercial Square Footage per Project
Office Development Summary	Total Office Square Footage; Office Projects; Percent of All Projects; Average Office Square Footage per Project
Hotel Development Summary	Hotel Rooms; Projects including Hotel Rooms; Percent of All Projects; Average Number of Hotel Rooms per Project
New Civic Features	Type of New Civic Feature
Affordable and Special Needs Housing	Existence of Affordable Housing; Policies or Development Initiatives
Plan Adoption	Adoption of LCI Plan; Incorporation of LCI Plan into Local Comprehensive Plan
Regulation Changes	Development Regulations Utilized; Recent Regulation Changes Made
Design Standards and Architectural Guidelines	Existence of Design Standards and Architectural Guidelines
Greenspace	Existence and Type of Greenspace
LCI Implementation	Establishment of Implementation Organization and Type
LCI Funding	Establishment of Additional Funding Sources and Type
Livability Components	Agreement with a Series of Questions on Livability
Plan Components	Usefulness of Required LCI Plan Components

Source: Atlanta Regional Commission. 2011. Livable Centers Initiative Implementation Report. (http://www.atlantaregional.com/land-use/livable-centers-initiative) Accessed March 2012.
LCI: Livable Centers Initiative

The implementation reports that the ARC prepares biannually seek to determine, among other things, the forms of development that are taking place in LCI areas, and how policies and regulations have changed in LCI communities to reflect the goals of the LCI program. They also examine the benefits and impacts the LCI plans, policies and resulting projects might have on the region as a whole. The implementation reports are available through the ARC website at: http://www.atlantaregional.com/land-use/livable-centers-initiative/.

2.3.5 New Jersey Transit Village Initiative

The New Jersey Transit Village Initiative is a state-based program to promote TOD in New Jersey. The program is staffed and directed by the New Jersey Department of Transportation (NJDOT), and has a task force made up of other state agencies to guide the direction of the initiative. To be designated as a Transit Village, a community would apply to the Transit Village Task Force and demonstrate through experience and planning that it supports the principles of the Transit Village Initiative, including compact development, transit-supportive land uses, and a high-quality pedestrian environment.[23] The Transit Village is designated as the half-mile area around the transit facility. Its aim is to reduce traffic congestion and improve air quality by promoting increased transit ridership, pedestrian activity, and bicycle use. In addition, the goals of economic revitalization and increasing the housing stock are part of an overall effort to create vibrant, enjoyable, and exciting areas around major transit nodes. The benefit of being a Transit Village is that this designation not only gives these municipalities priority consideration for state grants but also allows the municipalities to have direct contact with the representatives of these agencies. As of 2012, there are 24 Transit Villages located on the various transit lines in the state.

In early 2005, the NJDOT worked with the Voorhees Transportation Center (VTC) at Rutgers University to prepare an Annual Municipal Reporting Form for the Transit Village Initiative Program.[24] The purpose of the form is to gauge development activities in the Transit Village District and to assess the strengths and weaknesses of each municipality in finding and reporting development data. The form has four sections: construction activity, grants and incentive programs, other Transit Village activity, and additional comments and suggestions. When the Reporting Form was originally presented to Transit Villages, the VTC and NJDOT found that many of the host communities did not have the staff to gather and provide the requested information, and therefore, reduced the number of indicators that would monitor progress. These indicators are presented in Table 2-6. As of 2005, NJDOT had not implemented the monitoring process recommended by the VTC.[25]

23 New Jersey Department of Transportation (NJDOT). *Transit Village Initiative.* (http://www.nj.gov/transportation/community/village/index.shtml). Accessed April 2012.
24 Voorhees Transportation Center, Rutgers University. *Transit Village Monitoring Research*. October 2005.
25 Transportation Research Board. *Research Results Digest 294, Transit-Oriented Development: Developing a Strategy to Measure Success.* February 2005.

Table 2-6 VTC-Recommended Indicators for Assessing NJDOT's Transit Village Initiative

Indicator	Data Source
Net Increase in Dwelling Units	DCA
Total Construction Activity	DCA
Residential Construction Activity	DCA
Affordable Housing Units Created	DCA
Total Businesses in Transit Village	Local jurisdictions
Number of Automobile-Dependent Establishments	Local jurisdictions
Number of Transit-Supportive Shops	Local jurisdictions
Parking Spaces	Local jurisdictions
Acres of Brownfields Reclaimed	Local jurisdictions
Transit Ridership Counts	New Jersey Transit
Pedestrian Activity Counts	Local jurisdictions NJDOT
Public Perceptions	NJDOT
Public Investment	Local jurisdictions
Other Infrastructure or Transportation Improvements	Local jurisdictions

Source: Transportation Research Board. *Research Results Digest 294, Transit-Oriented Development: Developing a Strategy to Measure Success.* February 2005.
Notes:
DCA New Jersey Department of Community Affairs
NJDOT New Jersey Department of Transportation
VTC Voorhees Transportation Center

2.4 Summary

As directed in the Secretary's Certificate on the DEIS/DEIR for the South Coast Rail Project, existing plans smart growth and monitoring programs from across the United States were identified and reviewed for applicability to the proposed project. The purpose of the review was to identify metrics or indicators that may be used to evaluate implementation of the *Corridor Plan* with respect to PDAs, the PPAs, and the Station Areas. A total of five existing plans/programs were reviewed; three in depth including interviews, and two based on a review of existing, readily available materials.

A significant difference between the plans and programs review and the South Coast Rail Project is that there is no legislative mandate in Massachusetts that controls growth through the planning process. However, this does not mean that the goals and objectives of the *Corridor Plan* cannot be implemented; only that participation by the local communities would be voluntary rather than compulsory. Data collection to support the metrics and indicators would be accomplished through cooperation between state agencies, regional planning agencies, and local governments.

A number of commonalities were evident in the literature review and subsequent interviews. Data were typically collected every two years. In the case of SANDAG's RCP monitoring, the SANDAG staff had begun by collecting and reporting data every year. Collecting and reporting on the RCP progress every year became an extremely staff- and time-intensive task prompting SANDAG to revise the reporting

timeframe to every two years. As noted by other interviewees, reporting every year will not show any major trends. Change happens slowly and therefore, the performance metrics or evaluation indicators chosen should be descriptive without being overly complicated or too simplified. A number of well-developed metrics or indicators under a high level category may be needed to describe trends as illustrated by the large number of measures used by SANDAG and the PSRC for their *VISION 2040.*

Many of the metrics and indicators reviewed are simple metrics that could be reported with numbers. Others are more complex to report. Through the interviews completed, it was clear that metrics and indicators that reveal the performance trends without being too complex or overly simplistic are ideal. Similarly, data that are readily available is the simplest way to track metrics and indicators. The U.S. Census Bureau was often used due to the large amounts of data that are collected. In the case of the San Diego's *Regional Comprehensive Plan* and the Puget Sound Regional Council's *VISION 2040* and *Growing Transit Communities*, the regional planning agencies were the source of the data used to fulfill the metric or indicator. Other government agencies, and in very few cases, independent entities outside of the government, supplied data as well.